

## CONDOMS

# How, not just if, condoms are used: the timing of condom application and removal during vaginal sex among young people in England

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**Objective:** To assess the prevalence of, and factors associated with, vaginal penetration before condom application and following condom removal among young people in education in England.

**Method:** A large cross sectional survey (n=1373) was conducted in educational establishments in England and sexual event diaries were completed by a subsample of young people over a 6 month period.

**Results:** Of the 375 survey respondents who reported having used a condom on the most recent occasion of vaginal sex, 6% had applied the condom after penetration and 6% had continued penetration after condom removal. Of the 74 diary respondents, 31% applied a condom late and 9% removed a condom early at least once over a 6 month period. The odds of "imperfect" condom use were found to decrease with overall consistency of condom use, confidence in correct condom use, positive reported relationship with mother, non-use of other contraception, and desire to use a condom.

**Conclusion:** Given that late application and early removal of condoms fail to maximise their effectiveness as a method of STI prevention, it is important to address "imperfect" condom use and the factors associated with such use in public health policies and programmes. It is essential that young people understand the importance of using condoms consistently and correctly, and are also equipped with the skills and knowledge to do so.

It is well documented that the male condom is a reliable form of contraception and can provide an effective barrier to the transmission of HIV and other sexually transmitted infections (STIs).<sup>1</sup> While young people in the United Kingdom are reporting increased condom use at first intercourse, STI prevalence is still increasing.<sup>2,3</sup>

To date, research into young people's condom use has typically focused on simply whether condoms are used for vaginal intercourse. Far fewer studies have examined precisely how condoms are used. Those which have, in Australia and the United States for instance, have shown that between 38% and 51% of student respondents reporting at least one recent occasion of late application (after initial penetration) and 14%–15% reporting early removal.<sup>4–7</sup> Age, primary partner, lack of partner support, multiple partners, greater frequency of condom use, and using condoms for contraceptive purposes only have all been found to be positively associated with delayed condom application.<sup>8</sup>

This paper explores the extent of, and reasons for, ineffective condom usage during vaginal sex among young people in England.

## METHODOLOGY

A self completion sexual health questionnaire assessing, among other things, condom use practices at most recent vaginal sex was distributed among 1373 young people aged mostly 16–18 years attending 21 schools and colleges in four areas of England using cluster sampling. Each respondent was invited to participate in the second phase and 108 selected young people completed up to a maximum of 10 diary entries over a 6 month period, each one representing a sexual event in which oral, vaginal and/or anal sex had occurred.<sup>9</sup>

Each stage of the research was approved by the School of Psychology ethics committee, University of Southampton.

All data were analysed using SPSS v12.0 and potential clustering effects in the diary data were adjusted for during multivariate logistic regression analyses using MLwiN 2.0.

## RESULTS

Forty seven per cent of the survey respondents had ever engaged in vaginal sex, with 62% reporting condom use on the most recent occasion (n = 375). Three hundred and twenty two of the 714 diary entries described encounters in which a condom had been used for vaginal sex.

Six per cent of survey respondents who reported using a condom at most recent sex reported applying it after some initial penetration, with an additional 6% continuing intercourse after condom removal; 7% of all condoms used during the diary phase were applied late and 2% were removed early. While these prevalences appear relatively low, the proportion of diary respondents reporting that they had experienced late application at least once during the 6 month period was substantially higher at 31%, with 9% experiencing at least one occurrence of early removal.

Among diary respondents, the most common reasons given for applying a condom late were (1) intimacy, (2) that it feels better without, (3) that other contraception was used, and (4) that they got carried away; the three most common reasons given for using a condom on such occasions were (1) to avoid pregnancy, (2) to avoid making a mess, and (3) to make sex last longer. In just one instance was the late applied condom being used for STI prevention purposes.

Regression analyses (see table 1) indicated that condom users who also used another form of contraception were over three times more likely to use a condom imperfectly than those solely using condoms. Survey respondents who lacked a definite desire to use a condom were more likely, if they did use a condom, to use them imperfectly. Imperfect use was also found to increase among inconsistent condom users and those who lacked confidence in their knowledge of correct usage. Finally, respondents who reported a close relationship with their mother during their early teenage years had reduced odds of imperfect condom

**Abbreviations:** STI, sexually transmitted infection

**Table 1** Odds ratios assessing the effect of all significant bivariate predictor variables† on the likelihood of experiencing late condom application or early removal at most recent vaginal sex. (A) Logistic regression analyses of survey data from 16–18 year olds who had used a condom (n = 294). (B) Multilevel multivariate analyses of diary data after adjusting for clustering of events at the individual level (n = 315)

Characteristic	Odds ratio	95% CI
<b>(A) Consistency of condom use</b>		
Inconsistent user (ref)	1.00	
Always user	0.273**	0.114 to 0.657
Close/available mother (from 11–15 years)		
Agree (ref)	1.00	
Neither agree nor disagree	2.657*	1.010 to 6.984
Disagree	3.222*	1.044 to 9.944
I feel confident I know how to use a condom properly		
Agree (ref)	1.00	
No opinion/disagree	3.328*	1.073 to 10.325
–2 Log likelihood: 160.667		
Nagelkerke R <sup>2</sup> : 0.221		
<b>(B) Other contraception used</b>		
No (ref)	1.00	
Yes	3.46*	1.32 to 9.05
Respondent wanted to use a condom		
Yes (ref)	1.00	
No/sort of	2.81*	1.06 to 7.44
–2 Log likelihood: 30.15		
Log likelihood ratio test: $\chi^2 = 56.62$ , df = 3, p < 0.001		
Clustering effect: p > 0.05		

ref = reference category.

\*p < 0.05, \*\*p < 0.01.

†Background factors: sex, study site, deprivation ranking, age, ethnicity, parental availability and openness, parental portrayal of sex, friendship groupings.

Intermediate factors: knowledge and attitudes to sexual matters, STI testing, age at first vaginal sex, number of sexual partners, number of events of vaginal sex, consistency of condom use, perceived difficulty in condom communication and use, risk perception.

Event specific factors: recall time, drug and alcohol use, partner type, relationship status, relative age of partner, contraceptive communication, contraceptive agreements, desire for condom use, availability of condoms, previous condom use with partner, use of "other" contraception, location, expectedness, and desirability of event.

use. At the bivariate level, this effect was found to be highly significant for men (p < 0.000) but not for women.

## DISCUSSION

Imperfect condom use practices are found to be fairly prevalent among young people in England, with one in three diary respondents reporting at least one experience of non-optimal use over a period of up to 6 months.

Although the sample cannot be regarded as representative of the population (comprising young people still involved in education), such findings have implications for both research and for policy and practice. Firstly, the prevalence of "imperfect" use causes us to question the validity of binary (yes/no) self reported measures to examine risk behaviours and the effectiveness of condoms in protecting against STIs (see also Crosby *et al*<sup>10</sup>). Secondly, policies and programmes aimed at improving sexual health by increasing condom use may not maximise their impact if the possibility of imperfect use is not also addressed. The reduced effectiveness of condoms as a method of STI prevention when used incorrectly may result in users losing confidence in what should be a highly effective method. Such strategies should therefore benefit from this improved understanding of how condoms are being used.

Finally, the results show, yet again, that the quality of early family relationships appears to be related to subsequent sexual competence possibly manifested through communication skills, motivations for early sexual relations, and gender attitudes in general.<sup>11</sup>

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## Key messages

- Imperfect condom use practices (including late application and early removal) are found to be fairly prevalent among young people in England, with up to a third reporting at least one experience of non-optimal use over a period of up to 6 months
- Imperfect condom use is found to be associated with overall consistency of condom use, confidence in correct condom use, familial relationships, non-use of other contraception, and desire to use a condom
- If we are to see a reduction in STI prevalence, it is essential that young people understand the importance of using condoms consistently and correctly, and are also equipped with the skills and knowledge to do so

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## CONTRIBUTORS

All authors participated in the study planning and design; BH conducted the data collection and statistical analyses; BH was the lead writer of the extended paper; NS and RI edited the short report; and all authors provided detailed comments on the paper.

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